

**College of Information Technology**  
**Information network department**  
**Programming with Visual Basic**  
**Second Semester**  
**lecture 3**

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**Nested Loop:**

The nested loops are the loops that are placed inside each other. The most inner loop will be executed first, then the outer ones. These are examples of the nested loops.

**Possible**

```
For J=1 to 5
Statement
For I=1 to 5
Statement
Next I
Statement
Next J
```

**Error (Not Possible)**

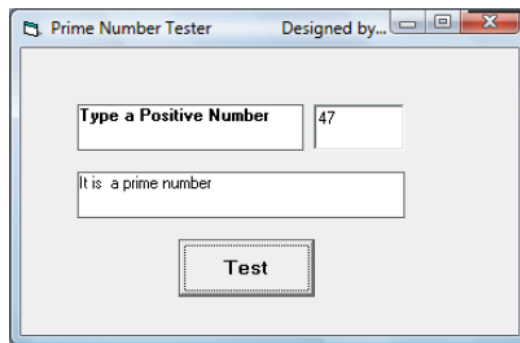
```
For K=1 to 5
Statement
    For I=1 to 5
    Statement
Next K
Statement
Next I
```

**Example:** Design a form with one command and two text boxes. Enter the value of integer number (N) in separate text box. Write a code program to check if the number (N) is a prime Number or not. Display the “It is not a prime number” or “It is a prime number” in separate text box.

**Solution:**

```
Private Sub Command1_Click()
Dim N, D As Single
Dim tag As String
N = Val(Text1.Text)
Select Case N
Case Is < 2
Text2.text = "It is not a prime number"
Case 2
Text2.text = "It is a prime number"
Case Is > 2
D = 2
Do
If N / D = Int(N / D) Then
Text2.text = "It is not a prime number"
tag = "Not Prime"
Exit Do
End If
D = D + 1
Loop While D <= N - 1
If tag <> "Not Prime" Then
Text2.text = "It is a prime number"

End If
End Select
End Sub
```



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**Example:** Create a Visual Basic Project to find the value of the following series.

$$\frac{\pi^2}{6} = 1 + \frac{1}{2^2} + \frac{1}{3^2} + \frac{1}{4^2} + \dots$$

Write the code program so that the number of terms (N) is entered into text box. Display the result (Pi) in separate text box when click on command (Find Pi).

**Solution:**

```
Private Sub Command1_click()
Dim S as double, N , I , T
N=val(text1.text) : S= 0.0
For I=1 To N
T=1 / I^2
S=S+T
Next
Pi=SQR (S*6)
Text2.text=Str (Pi)
End Sub
```

**Example:** Create a Visual Basic Project to find the value of the following series.

$$\sin(x) = x - \frac{x^3}{3!} + \frac{x^5}{5!} - \frac{x^7}{7!} + \dots$$

Write the code program so that the value of angle (X) is entered into text box. Estimate the value of series (Sin(x)) so that the absolute value of any term is greater or equal than  $10^{-6}$ . Display the required number of terms (N) which it used in this series in a separate text box and display the result of series (Sin(x)) in another separate text box.

**Solution:**

```
Private Sub Command1_click()
Dim X, Sx, I, J, T, K, N, Fact
X = Val(Text1.Text): X = X * 3.14 / 180
N = 1: K = 1: Sx = 0#
10Fact = 1
For I = 1 To 2 * N - 1
Fact = Fact * I
Next I
T = X ^ (2 * N - 1) / Fact
If Abs(T) >= 0.000001 Then
Sx = Sx + T * K
K = -K: N = N + 1
GoTo 10
Else
Text2.Text = Str(N)
Text3.Text = (Sx)

```

End If: End Sub

**Example:** Create a Visual Basic Project to find the value of the following series.

$$\text{Sum} = \sum_{i=1}^{i=N} a * i + b$$

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Write the code program so that the value of constants (a, and b) are entered into text boxes. When the users click checkbox, calculate the value of series (where the total number of terms is equal 20). When the user unchecked the checkbox, the number of terms (N) is entered into input box and calculate the value of series. Display the value of series (Sum) in a separate text box.

**Solution:**

```
Private Sub Command1_Click ()
Dim a, b, Sum, N
a = Val (Text1.Text)
b = Val (Text2.Text)
Sum = b
If Check1.Value = 1 Then
For I = 1 To 20
Sum = Sum + a * I
Next
Else
N = Val (inputbox ("No. of terms="))
For I = 1 To N
Sum = Sum + a * I
Next
End If
Text3.Text = Str (Sum)
End Sub
```

**Exercise:** Create a Visual Basic Project to find the value of the following series.

$$\cos(x) = 1 - \frac{x^2}{2!} + \frac{x^4}{4!} - \frac{x^6}{6!} + \dots$$

Write the code program so that the value of angle (X) is entered into text box and the number of terms (N) is entered into input box. Calculate the value of series and display the result of series (Cos(x)) in another separate text box.

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**Exercise:** Create a Visual Basic Project to find the value of the following series.

$$Y = 1 - \frac{X^3}{3^2} + \frac{5X^7}{7^2} - \frac{9X^{11}}{9^2} + \dots \quad X > 0$$

$$Y = \frac{X^2}{2^2} - \frac{3X^6}{6^2} + \frac{5X^{10}}{10^2} - \dots \quad X < 0$$

Write the code program so that the value of (X) is entered into text box. Estimate the value of series (Y) until the absolute value of any term is less than  $10^{-6}$ . Display the required number of terms (N) which it used in this series in a separate text box and display the result of series (Y) in another separate text box.